The Amendments are made to correct obvious errors in grammar, spelling, and to ensure that the referenced numerals in the specification are consistent with the reference numerals used in the drawings.

No new matter is being added by this Preliminary Amendment.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in conditions for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned at (978) 341-0036.

Respectfully submitted,

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MARKED UP VERSION OF AMENDMENTS

Specification Amendments Under 37 C.F.R. § 1.121(b)(1)(iii)

Replace the paragraph at page 9, lines 7 through 17 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In a further embodiment, upstream biasing affects [effects] which ions flow to the filter. For example, a sample flows into an ionization region subject to ionization source, and electrodes are biased to deflect and affect flow of the resulting ions. Positive bias on a deflection electrode repels positive ions toward the filter and attracting electrodes being negatively biased attract the positive ions into the central flow of the ion filter, while negative ions are neutralized on the deflection electrode and which are then swept out of the device. Negative bias on the deflection electrode repels negative ions toward the filter and attracting electrodes positively biased attract the negative ions into the central flow path of the filter, while positive ions are neutralized on the deflection electrode.

Replace the paragraph at page 10, lines 15 through 21 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In various embodiments of the invention, a spectrometer is provided where a plurality of electrodes are used to create a filter field and a propulsion field, in a cooperative manner that may [be] feature simultaneous, iterative or interactive use of electrodes. Where a plurality of electrodes face each other over a flow path, the filter field and the propulsion field may be generated using the same or different members of the electrode plurality. This may be achieved in a simple and compact package.

Replace the paragraph at page 14, lines 1 through 6 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

The system is preferably driven by electronic controller 30, which may include, for example, amplifier 34 and microprocessor 36. Amplifier 34 amplifies the output of detector 32, which is a function of the charge collected by electrode 35 and provides the output to microprocessor 36 for analysis. Similarly, amplifier 34', shown in phantom, may be provided where electrode 33 is also utilized as a detector.

Replace the paragraph at page 15, lines 8 through 23 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In an alternative practice of the invention, the duty cycle of the asymmetric periodic voltage applied to electrodes 20 and 22 of filter 24 is varied so that there is no need to apply a compensation voltage. The control electronics varies the duty cycle of asymmetric alternating electric field 25, with the result that path of a selected ion species (defined mostly by charge and cross-section, among other characteristics, of the ions) is returned toward the center of the flow path, and so to pass on for detection. As an example, and not by way of limitation, the duty cycle of field 25 may be one quarter: 25% high, peak 70, and 75% low, valley 72; in which case, ions 19 on path 42a approach and collide with a filter electrode 20 and are neutralized (Fig. 3A). However, by varying the duty cycle to 40%, peak 70a, 60% low, valley 72a, ions 19' on path 42c pass through filter 24 and toward the detector without being neutralized <u>(Fig. 3B)</u>. Typically the duty cycle is variable from 10-50% high and 90-50% low [(Fig. 3B)]. Accordingly, by varying the duty cycle of field 25 an ion's path in field 25 may be corrected so that it will pass through filter 24 without being neutralized and without the need for a compensating bias voltage.

Replace the paragraph at page 16, lines 16 through 23 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

To improve FAIMS spectrometry resolution even further, detector 32[,] may be segmented, as shown in Fig. 4. As ions pass through filter 24 between filter electrodes 20 and 22, the individual ions 19'-19'''' may be detected spatially, the ions having their trajectories 42c'-42c'''' determined according to their size, charge and cross section. Thus detector segment 33' will have a concentration of one species of ion while detector segment 33'' will have a different ion species concentration, increasing the spectrum resolution as each segment may detect a particular ion species.

Replace the paragraph at page 16, lines 24 through 27 and page 17 lines 1 through 5 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

A PFAIMS spectrometer as set forth herein is able to detect and discriminate between a wide range of compounds, and can do so with high resolution and sensitivity. As shown in Fig. 5A, varying concentrations of acetone that were clearly detected in one practice of the invention, with definitive data peaks 46 at -3.5 volts compensation. These were detected even at low concentrations of 83 parts per billion. With the bias voltage set at -6.5 volts, Fig. 5B, varying concentrations of [diethyl methyl] <u>di-ethylmethyl</u> amine were clearly detected in practice of the invention, generating data peaks [46] <u>48</u>; these were detected in concentrations as low as 280 parts per billion.

Replace the paragraph at page 17, lines 22 through 25 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

Embodiments of the invention are compact with low parts count, where the substrates and spacers act to both contain the flow path and also [to] for a structural housing of the

invention. Thus the substrates and spacers serve multiple functions, both for guiding the ions and for containing the flow path.

Replace the paragraph at page 19, lines 1 through 15 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

Dual chamber embodiment 10x of the invention, Fig. 8, has two enclosed flow paths 26', 26" coupled by passageway 63. The gas sample 12 enters inlet 16a and is ionized at ionization region 17 in the lower flow path 26', ionized by any ionization device, such as an internal plasma source 18a. The ions are guided toward ion filter 24a in upper flow path 26" through passageway 63 by electrodes 56ax and 56bx, which act as steering or deflecting electrodes, and may be defined by confining electrodes 56a, 56b <u>(discussed earlier)</u>. As these ions 42c pass between ion filter electrodes 20a and 22a, undesirable ions will be neutralized by hitting the filter electrodes while selected ions will pass through filter 24a to be detected by detector 32a, according to the applied RF and compensation. By deflecting ions out of the gas flow, a preliminary filtration is effected, wherein the non-deflected ions and non-ionized sample and associated carrier gas will be exhausted at outlet 16x'. The exhaust gas 43 from upper flow path 26", at outlet 16x", may be cleaned, filtered and pumped via pump part 14 [14a] and returned at inlet 16b as clean filtered gas 66 back into the flow path 26". <u>In one practice of the invention, clean dry air may introduced into the flow path via pump 14.</u>

Replace the paragraph at page 19, lines 16 through 23 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

[In one practice of the invention, clean dry air 66a may be introduced into flow path 26 through clean air inlet 66 via pump 14.]Drawing in clean dry air assists in reducing the FAIMS spectrometer's sensitivity to humidity. Moreover, if the spectrometer is operated alternately with and without clean dry air, and with a known gas sample introduced into the

device, then the device can be used as a humidity sensor since the resulting spectrum will change with moisture concentration from the standardized spectrum for the given known sample.

Replace the paragraph at page 20, lines 10 through 19 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

Another advantage of the embodiment of Fig. 8 is that the dynamic range of the PFAIMS detector can be extended when employing a front end device (such as a GC, LC or electrospray for example). In one practice of the invention, by adjusting the ratios of the drift gas and GC-sample/carrier gas volume flow rates coming into ionization region 17, the concentration of the compounds eluting from the GC can be controlled/diluted in a known manner so that samples are delivered to the PFAIMS ion filter 24a [24] at concentrations which are optimized for the PFAIMS filter and detector to handle. In addition, steering electrodes 56ax, 56bx can be pulsed or otherwise controlled to determine how many ions at a given time enter into flow path 26".

Replace the paragraph at page 23, lines 13 through 22 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In the embodiment of the invention shown in Fig. 11, ion filter 240 includes spaced electrodes 276 and 277 for creating transverse filter field 242. The ion flow generator 250 includes spaced discrete electrodes, such as electrode pairs 282-284 and 286-288, for generating longitudinal transport field 252. In one practice, electrodes 282 and 284 are at 1000 volts and electrodes 286 and 288 are at 0 [1000] volts. Insulating medium 290 and 291 insulates electrodes 282, 284, 286, and 288 with respect to electrodes 276 and 277. Electrode pair 282-284 could also be coupled as a single ring electrode and electrode pair 286-288 could be coupled [also be] as a single ring electrode in a cylindrical embodiment of the invention.

Replace the paragraph at page 26, lines 3 through 12 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In still another embodiment, spectrometer embodiment 359 shown in Fig. 16 includes RF electrodes 360, 362, which provide the asymmetric ion filtering electric field [252] <u>242 which</u> are disposed on the outside walls of insulative substrates 52, 54. Resistive layers 370 and 372 may be a resistive ceramic material deposited on the inside walls of insulating substrates 52 and 54, respectively. Terminal electrodes 374-375, and 377-378 make contact with each resistive layer <u>and are</u> [is] shown to enable a voltage drop across each resistive layer to generate the ion propelling longitudinal electric field 252. Thus, electrodes 374 and 377 may each be at -100 volts while electrodes 375 and 378 are at -1000 volts, for example.

Replace the paragraph at page 26, lines 13 through 23 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In the embodiment of Fig. 17, spectrometer 379 has discrete electrodes 380-386 on substrate 52 and 387-<u>393</u> [394] on substrate 54 which cooperate to produce an electrical field or fields. The net effect provides both transverse and longitudinal field components to both filter and propel the ions. A traveling wave voltage of the form

$$V\cos(wt-kz)$$

where $k = 2\pi/\lambda$ is the wave number has an associated electric field with both transverse and longitudinal components 242+252. For a planar system, each succeeding set of opposing electrodes is excited by a voltage source at a fixed phase difference from the voltage source applied to the adjacent set of opposing electrodes.

Replace the paragraph at page 27, lines 5 through 18 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In an alternative of the embodiment of Fig. 17, the discrete electrodes 380-386 and 387-393 [394] are still driven to produce both transverse and longitudinal fields to both filter and propel the ions. The PFAIMS RF signal is applied to the electrodes to generate the transverse RF field, which may involve one electrode on each substrate or multiple electrodes. Compensation is also generated, either by varying the duty cycle or the like of the RF, or by applying a DC bias to the electrodes, which may involve one electrode on each substrate or multiple electrodes. Finally, the ion flow generator includes a selection of these electrodes biased to different voltage levels (e.g., 1000vdc on electrodes 380 and 387 and 100vdc on electrodes 386 and 393) to generate a gradient along the flow path. Compensation voltage applied to the RF filter field opens the filter to passage of a desired ion species if present in the sample as propelled by the flow generator. If the compensation voltage is scanned, then a complete spectrum of the compounds in a sample can be gathered.

Replace the paragraph at page 28, lines 10 through 20 with the below paragraph marked up by way of bracketing and underlining to show the changes relative to the previous version of the paragraph.

In an illustrative embodiment, upstream biasing affects [effects] which ions flow to the filter. For example, a sample S flows ("IN") into an ionization region 415 subject to ionization source 416. Electrodes 417, 418, 419 are biased to deflect and affect [effect] flow of the resulting ions. Positive bias on electrode 419 repels positive ions toward the filter and electrodes 417, 418 being negatively biased attract the positive ions into the central flow of filter 420, while negative ions are neutralized on electrode 419 and which are then swept out ("OUT") of the region. Negative bias on electrode 419 repels negative ions toward the filter and electrodes 417, 418 being positively biased attract the negative ions into the central flow path 26 of filter 420, while positive ions are neutralized on electrode 419.

Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

1. (Amended) An asymmetric field ion mobility apparatus for identification of ion species, the apparatus comprising:

an ion filter [disposed in] associated with a flow path, said flow path having a longitudinal axis for the flow of ions, said filter supplying an asymmetric filter field transverse to said longitudinal axis, said filter field being compensated;

an ion flow part [generator] for longitudinally propelling ions along said flow path [in said compensated asymmetric filter field], said ion flow part [generator] propelling said ions via a propulsion field, said propelled ions flowing in said filter; and

[the] said ion filter selecting [passing] a species of said propelled ions flowing in said filter, said species having at least one characteristic [set of characteristics] correlated with said compensated asymmetric filter field [compensation], said correlation facilitating identification of said species.

2. (Amended) Apparatus of claim 1 further comprising:

an ion source and a detection region, the ion flow part [generator] providing a [control of] flow of said ions flowing in the filter from the ion source in a longitudinal direction toward the detection region said selected species .

3. (Amended) Apparatus of claim 1 wherein the asymmetric field is compensated to prefer a species of the ions to be passed through the filter by the flow part [generator].

4. (Amended) Apparatus of claim 2 further comprising a detector in said detection [the detector] region, said [the] detector generating a detection signal representative of said ion species passed by the filter.

5. (Amended) Apparatus of claim 1 wherein said ion flow part [generator] further comprises an electric propulsion field for providing said propelling.

6. (Amended) Apparatus of claim 5 wherein said propulsion [filed] field is a longitudinal electric field and wherein [the] a control part includes an intelligent electronic controller, including a microprocessor, for controlling said compensated asymmetric field and said longitudinal field and for correlating said controlling [control with said] with a detection signal.

7. (Amended) Apparatus of claim [5] 6 wherein the control part includes an intelligent electronic controller, including a microprocessor and lookup table, for controlling said compensated asymmetric field and said longitudinal propulsion with control signals and for correlating said control signals with said detection signal and said lookup table, for identifying said detected ion species.

8. (Amended) Apparatus of claim 2 wherein the ion filter includes at least a pair of electrodes facing each other over the flow path having connection for an electric controller, said controller for applying a compensated asymmetric periodic voltage to said filter electrodes.

9. (Amended) Apparatus of claim 1 wherein the ion filter includes a plurality of electrodes facing each other over the flow path and having pads for connection to an electric controller, members of the plurality being used to create said [a] filter field and a longitudinal propulsion field.

12. (Amended) Apparatus of claim 2 wherein one or more sets of electrodes are used to create said filter [a filtering electric] field for ion discrimination and the ion flow part [generator] uses [the same or a second set of] one or more of said electrodes to create an electric field at some angle to said filter [the filtering electric] field for propelling said ions through [the] said filtering field.

15. (Amended) Apparatus of claim 2 wherein said ion flow part [generator] provides a longitudinal electric field transport to said ions in said filter.

17. (Amended) Apparatus of claim 16 wherein [the strength of] said longitudinal electric field is either constant or varying in time or space, and may be pulsed.

18. (Amended) Apparatus of claim 2 wherein said ion flow part [generator] further comprises discrete electrodes supported by and insulated from said filter electrodes by an insulating medium.

21. (Amended) Apparatus of claim 1 further having an ion source and a detector region, a plurality of electrodes forming said ion flow part [generator] and being used to create a propulsion field which flows ions in a longitudinal direction away from said ion source [upstream of said flow path and] toward said detector region [downstream of said flow path].

22. (Amended) Apparatus of claim 21 wherein said plurality of electrodes defines first and second sets of electrodes, said sets facing each other across said flow path, a respective longitudinal electric field being established between the electrodes of each set, each said respective longitudinal field having a longitudinal flow direction [downstream] along said flow path toward said detector region.

24. (Amended) Apparatus of claim 23 wherein said first and second sets of electrodes each include a first bias electrode and a second bias electrode for application of a dc bias thereto, the first of said bias electrodes in each said set being biased relatively more [negative] than the second of said bias electrodes of each said set.

28. (Amended) Apparatus of claim 12 wherein said filter electrodes are interspersed with said ion flow part [generator] electrodes.

30. (Amended) Apparatus of claim 21 wherein said ion filter and said ion flow part [generator] share common longitudinal space along said flow path.

31. (Amended) Apparatus of claim 1 wherein said ion flow is from an ion source downstream along said flow path toward a detector, wherein said filter operates without a gas flow through it in said downstream direction.

33. (Amended) Apparatus of claim 32 wherein said reverse gas flow includes a supply of clean filtered gas for cleansing of said ion filter [and detector region].

35 (Amended) Apparatus of claim 1 wherein said ion flow <u>part</u> [generator] includes spaced discrete electrodes along the flow path.

38. (Amended) Apparatus of claim 37 wherein said ion flow <u>part</u> [generator] electrodes are formed over said insulation layer.

40. (Amended) Apparatus of claim 9 wherein [ions in] said ions flow from an ionization region and are propelled <u>in</u> [by] a low volume flow along the direction of said flow path longitudinal axis by an electric field.

44. (Amended) Apparatus of claim [43] <u>42</u> wherein said electrodes are coated with a thin insulator and a resistive layer and propulsion electrodes are formed on said resistive layer for generation of said longitudinal electric field therebetween.

45. (Amended) Apparatus of claim 44 wherein said propulsion electrodes make contact with said resistive layer to enable a voltage drop [across] that generates said longitudinal electric field.

46. (Amended) Apparatus of claim 9 <u>wherein</u> said flow path defines a gap between said filter electrodes, further including a second flow path, said first and second flow paths joined by a passageway, further having a source for a sample-carrying gas, said second flow path for receipt of said sample-carrying gas, ions <u>in</u> [of] said sample-carrying gas being flowed into said second flow path via said passageway.

47. (Amended) Apparatus of claim 46 further comprising deflection electrodes for deflection of said ions into said first flow path, said ions flowed into said gap by said ion flow <u>part</u> [generator].

48. (Amended) Apparatus of claim 47 wherein said ion flow <u>part</u> [generator] propels said ions through said asymmetric [ion] <u>filter</u> field.

53. (Amended) Apparatus of claim 52 wherein ones of said electrodes receive DC compensation from said controller for said compensation of said filter field.

54. (Amended) Apparatus of claim 52 further including a plurality of electrodes for generation of an ion propelling electric field by said ion flow part [generator].

55. (Amended) Apparatus of claim 54 wherein said high frequency electrodes and [are driven while] the longitudinal field producing electrodes have a potential developed across them.

57. (Amended) Apparatus of claim 1 further including a plurality of filter electrodes connectable to an electric controller for application of an asymmetric periodic voltage to create said filter field, further including a plurality of electrodes for generation of an ion propelling electric field by said ion flow part [generator], wherein said high frequency electrodes are drivable while or interspersed with driving the longitudinal field producing electrodes.

62. (Amended) Apparatus of claim 54 wherein an electrical field presence is generated by driving several of said electrodes, said field presence having both transverse and longitudinal components to both filter and propel the ions, wherein an RF signal is applied to the electrodes to generate a transverse RF filter field, which is compensated, and said ion flow part [generator] includes a selection of said electrodes biased to different voltage levels to generate a gradient along the flow path.

67 (Amended) Apparatus of claim 1 further including an ionization source for ionization of a sample to generate ions to be flowed by said ion flow part [generator].

68. (Amended) Apparatus of claim 67 wherein the ionization source is selected from the group including [includes] a radiation source, an ultraviolet lamp, a corona discharge device, a plasma source or an electrospray nozzle.

69. (Amended) An asymmetric field ion mobility spectrometer apparatus comprising:

a flow path for the flow of ions in a longitudinal direction from an ionization region toward a detector region;

an ion filter disposed in the flow path [after] downstream from the ionization region, the ion filter disposed in the flow path and supplying an asymmetric field transverse to the flow path;

an ion flow device [generator] for creating a longitudinal transport field for propelling ions in the filter longitudinally along the flow path;

the asymmetric field transverse to the ion flow in the flow path; and

the ion filter passing ions toward the detector region as influenced by the transverse asymmetric field and as propelled by the longitudinal transport field.

70. (Amended) Apparatus of claim 69 in which the ion filter is connected to an electric controller for applying an asymmetric periodic voltage to the ion filter, and wherein said ion filter includes a pair of spaced electrodes for creating a compensated asymmetric electric field and the ion flow device [generator] includes a plurality of spaced electrodes for creating the longitudinal field.

71. (Amended) Apparatus of claim 70 in which the ion filter includes a first plurality of discrete electrodes electrically connected to an electric controller which applies an asymmetric periodic voltage to the first plurality of discrete electrodes and in which the ion flow device [generator] includes a second plurality of discrete electrodes dispersed among the first plurality of discrete electrodes connected to a voltage source which generates a potential gradient along the second plurality of discrete electrodes creating a preferential ion flow direction in said flow path.

72. (Amended) Apparatus of claim 71 in which the gap between the filter electrodes is enclosed by a housing, said ion filter includes electrodes on a surface of the housing and the ion flow device [generator] includes electrodes proximate to the ion filter.

73. (Amended) Apparatus of claim 72 in which the ion detector includes electrodes on an inside surface of the housing proximate the ion filter and the ion flow device [generator].

74. (Amended) Apparatus of claim 72 in which the gap is enclosed by a housing, the ion filter includes electrodes on an outside surface of the housing and the ion flow device [generator] includes resistive layers on an inside surface of the housing and a voltage is applied along each layer to create a longitudinal electric field.

75. (Amended) Apparatus of claim 69 wherein the ion filter and the ion flow device [generator] are combined and include a series of discrete conductive elements each excited by a voltage source at a different phase.

76. (Amended) Apparatus of claim 69 wherein the ion filter and the ion flow device [generator] include a series of electrodes in said flow path each excited by a voltage source, electrodes associated with said flow device [generator] having a multiphase signal applied thereto for generation of said longitudinal transport field.

78. (Amended) Apparatus of claim 77 further comprising a controller for selectively applying a bias voltage and an asymmetric periodic voltage across the filter electrodes to control the path of ions through the filter under influence of said ion flow device [generator], and an output region for delivery of ions passed by said filter for detection.

82. (Amended) Method for analysis of chemicals in a sample, comprising the steps of:

placing an ion filter in a flow path, said flow path having a longitudinal axis for the flow of ions,

driving said filter to create an asymmetric filter field transverse in said flow path to said longitudinal axis,

forming an ion flow field [generator] in said flow path in cooperation with said [ion filter] asymmetric filter field,

driving said ion flow field [flow generator] for longitudinally propelling said ions along said flow path in said asymmetric filter field; and

compensating said asymmetric filter field for passing a selected species of said propelled ions, said species having at least one characteristic [a set of characteristics] correlated with said compensation, said correlation facilitating identification of said species.

84. (Amended) Method of claim 83 further comprising the steps of:

providing an intelligent electronic controller, including a microprocessor, for controlling said compensated asymmetric field and said ion flow [longitudinal] field and for correlating said control with said detection [signal].

85. (Amended) Method of claim 83 further comprising the steps of:

providing an intelligent electronic controller, including a microprocessor and lookup table, for controlling said compensated asymmetric field and said [longitudinal] ion flow field with control signals and for correlating said control signals with said detection signal and said lookup table, for identifying said detected ion species.

86. (Amended) Method of claim 83 wherein the ion filter includes at least a pair of electrodes facing each other over the flow path having connection for an electric controller, said controller for applying a compensated asymmetric periodic voltage to said filter electrodes.

87. (Amended) Method of claim 86 wherein the ion filter includes a plurality of electrodes facing each other over the flow path and having pads for connection to an electric controller, members of the plurality being used to create [a] said asymmetric filter field and [a] said ion flow [propulsion] field.

88. (Amended) Method of claim 87 wherein said members create said asymmetric filter field and said ion flow [propulsion] field simultaneously.

89. (Amended) Method of claim 87 wherein said members create said <u>asymmetric</u> filter field and said <u>ion flow</u> [propulsion] field simultaneously using different members of said plurality.

90. (Amended) Method of claim 87 wherein one or more sets of electrodes are used to create a filtering electric field for ion discrimination and the ion flow <u>field is generated using</u> [generator uses] the same or a second set of electrodes to create an electric field at some angle to <u>said asymmetric filter</u> [the filtering electric] field for propelling said ions through <u>said asymmetric</u> [the] filtering field.

92. (Amended) Method of claim 82 <u>wherein said compensating</u> further comprising the step of application of compensation to said filter to pass ions forming said species sharing a common set of characteristics, said <u>ion flow</u> [longitudinal] field propelling ions through said asymmetric <u>filter</u> [electric] field according to said characteristics and said <u>applied</u> [filter] compensation.

93. (Amended) Method of claim 82 further comprising the step of providing a longitudinal electric field that is either constant or varying in time or space <u>to provide said propulsion</u>.

97. (Amended) Method of claim 82 further <u>including the step of providing</u> [having] an ion source and a detector region, a plurality of electrodes forming said ion flow [generator and being used to create a propulsion] field which flows ions in a longitudinal direction away from said ion source [upstream of said flow path and] toward said detector region [downstream of] <u>in</u> said flow path.

98. (Amended) Method of claim 82 <u>further including the step</u> wherein said plurality of electrodes defines first and second sets of electrodes, said sets facing each other across said flow path, a longitudinal electric field being established between the electrodes of each set, each longitudinal field having a longitudinal flow direction [downstream] along said flow path toward said detector region.

99. (Amended) Method of claim 98 further including the step wherein said longitudinal fields are essentially equal.

100. (Amended) Method of claim 99 further including the step wherein said first and second sets of electrodes each include a first bias electrode and a second bias electrode for application of a dc bias thereto, the first of said bias electrodes in each said set being biased relatively more [negative] than the second of said bias electrodes of each said set.

101. (Amended) Method of claim 100 further including the step of providing [further comprising] an ion concentrating device, said device urging said ions toward the center of said flow path as they flow downstream in said filter.

102. (Amended) Method of claim 101 further including the step wherein said concentrating device includes said pairs of biased electrodes, wherein said propelled ions are driven toward the center of said flow path as they flow downstream down the center of said flow path.

103. (Amended) Method of claim 82 further including the step wherein the ion filter is operated without a carrier gas flowing therethrough.

104. (Amended) Method of claim 82 further including the step wherein said filter operates with a reverse gas flow through it.

105. (Amended) Method of claim 82 further including the step of providing [further comprising] a housing, said housing defining said flow path.

106. (Amended) Method of claim 105 further including the step of providing [further comprising] a plurality of filter and propulsion electrodes, wherein said housing is defined by cooperating substrates on which said electrodes are formed.

107. (Amended) Method of claim 106 further including the step wherein said electrodes include a plurality of high frequency, high voltage filter electrodes connected to an electric controller for application of an asymmetric periodic voltage to create said filter field.

108. (Amended) Method of claim 107 further including the step wherein ones of said electrodes receive DC compensation from said controller.

109. (Amended) Method of claim 82 further including the step of providing [further including] a plurality of electrodes for generation of an ion propelling electric field by said ion flow part [generator].

110. (Amended) Method of claim 82 further including the step of generating [wherein] an electrical field presence [is generated] by driving several of said electrodes, said field presence having both transverse and longitudinal components to both filter and propel the ions, by application of a traveling wave voltage.

111. (Amended) Method of claim 82 further including the step of providing [wherein] an electrical field presence [is generated] by driving several of said electrodes, said field presence having both transverse and longitudinal components to both filter and propel the ions, wherein an RF signal is applied to the electrodes to generate a transverse RF filter field, which is compensated, and said ion flow part [generator] includes a selection of said electrodes biased to different voltage levels to generate a gradient along the flow path.

112. (Amended) Method of claim 82 further including the step of providing [further comprising] a molecular sieve located proximate to said filter to absorb neutral molecules.

113. (Amended) An asymmetric field ion mobility apparatus for identification of ion species, the apparatus comprising:

an ion filter disposed in a flow path, said flow path having a longitudinal axis for the flow of ions, said filter supplying an asymmetric filter field transverse to said longitudinal axis;

an ion flow [generator] part for longitudinally propelling ions along said flow path in said asymmetric filter field; and

the ion filter passing a species of said propelled ions, said species having a set of correlated characteristics, said correlation facilitating identification of said species, said species being identified by trajectory.

114. (Amended) Apparatus of claim 113 wherein said species are propelled in said [a] trajectory in said filter, each said ion species having a set of characteristics correlated with said trajectory, said correlation facilitating identification of said species.

116. (Amended) Apparatus of claim 115 further comprising first and second substrates, said flow path defined by said substrates, wherein an RF filter electrode is associated with [a] said first substrate and a plurality of multi-function electrodes is associated with [a] siad second substrate and facing the filter electrode over the flow path.

118. (Amended) Apparatus of claim 117 wherein said ions are propelled by the ion flow part, wherein said detector electrodes are monitored such that [, wherein] a particular species can be identified based on its trajectory for a given detection at said monitored detector electrodes and based on the fields in said flow path [generated and the ion transport mechanism whether gas or electric field].